

We claim:

1. A process for the catalytic hydrogenation of an aliphatically unsaturated group in an organic compound in the presence of a catalyst whose preparation has involved precipitation of catalytically active components onto monoclinic, tetragonal or cubic zirconium dioxide.
- 5 2. A process as claimed in the preceding claims, wherein the catalytically active components precipitated are salts of a metal selected from transition groups VIII and IB of the Periodic Table.
- 10 3. A process as claimed in the preceding claim, wherein the metal salts are basic salts which are sparingly soluble or insoluble in water.
- 15 4. A process as claimed in either of the two preceding claims, wherein the salts are oxides, hydrated oxides, hydroxides, carbonates and/or hydrogencarbonates.
5. A process as claimed in any of claims 2 to 4, wherein the metal is selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Pt and Cu.
- 20 6. A process as claimed in any of claims 2 to 4, wherein the metal is selected from the group consisting of Cu, Ni and Co.
7. A process as claimed in any of the preceding claims, wherein the catalytically active composition of the catalyst before treatment with hydrogen comprises from 20 to 85% by weight of oxygen-containing compounds of zirconium, calculated as ZrO₂, from 1 to 30% by weight of oxygen-containing compounds of copper, calculated as CuO, and from 14 to 70% by weight of oxygen-containing compounds of nickel, calculated as NiO.
- 25 30 8. A process as claimed in any of the preceding claims, wherein the catalytically active composition of the catalyst before treatment with hydrogen comprises from 20 to 65% by weight of oxygen-containing compounds of zirconium, calculated as ZrO₂, from 1 to 30% by weight of oxygen-containing compounds of copper, calculated as CuO, from 15 to 50% by weight of oxygen-containing compounds of nickel, calculated as NiO, and from 15 to 50% by weight of oxygen-containing compounds of cobalt, calculated as CoO.
- 35 9. A process as claimed in any of claims 5 to 8, wherein the molar ratio of nickel to copper is greater than 1.

10. A process as claimed in any of the preceding claims, wherein the monoclinic, tetragonal or cubic zirconium dioxide contains one or more oxides of metals of transition groups IIIB or main group IIA of the Periodic Table.
- 5 11. A process as claimed in any of the preceding claims, wherein the hydrogenation is carried out at from 20 to 300°C.
12. A process as claimed in any of the preceding claims, wherein the hydrogenation is carried out in the gas/liquid phase at absolute pressures of from 1 to 320 bar or in the gas phase 10 at pressures of from 1 to 100 bar.
13. A process as claimed in any of the preceding claims, wherein the unsaturated group is an aliphatic CC double bond or CN double bond.
- 15 14. A process as claimed in any of claims 1 to 12, wherein the unsaturated group is an aliphatic CC triple bond or CN triple bond.
15. A process as claimed in any of claims 1 to 12, wherein the aliphatically unsaturated group 20 is an aldehyde group or keto group.
16. A process as claimed in any of claims 1 to 12 for preparing a secondary amine, wherein the aliphatically unsaturated group is a nitrile group and a reaction with a primary amine is carried out.
- 25 17. A process as claimed in any of claims 1 to 12 for preparing a tertiary amine, wherein the aliphatically unsaturated group is a nitrile group and a reaction with a secondary amine is carried out.
18. The use of a catalyst as claimed in any of claims 1 to 12 for the hydrogenation of an 30 aliphatically unsaturated group in an organic compound.
19. The use as claimed in claim 16 for the hydrogenation of an aliphatic CC double bond or CN double bond, an aliphatic CC triple bond or CN triple bond or an aldehyde group or keto group.